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THESIS

AN ANALYSIS OF REENLISTMENT INTENTION AND
ACTUAL REENLISTMENT OF ARMY MALE
SECOND-TERM ENLISTED PERSONNEL

by

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Thesis Advisor: George W. Thomas

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This thesis investigated an Army male second-termer's intended and actual reenlistment to identify key factors that significantly affect his decision to prolong his career in the Army using the 1985 DoD Survey of Officers and Enlisted Personnel conducted for the office of the Assistant Secretary of Defense (Force Management and Personnel). The sample was limited to those in paygrades E4-E6, with 5-10 years of service, and who had less than one year remaining in their commitment. Psychological, economic, organizational, and personal/demographic characteristics were investigated to determine their effect on the enlistees' career decision. A multivariate logit regression model was estimated utilizing these explanatory variables: Single/Wo/Dep., Single/W/Dep., Married/Wo/Dep., Black, Hispanic, YOS, Medical, Admin/Supply, Probability of Alternative, and Composite variables for satisfaction with work environment, and satisfaction with pecuniary benefits. The result indicates that there were significant differences in the factors affecting the intended and actual reenlistment decisions. Black, YOS, Medical, Probability of Alternative, Satisfaction with Work Environment, and Satisfaction with Pecuniary Benefits were significant in explaining intentions while Single/Wo/Dep., Married/Wo/Dep., Admin/Supply, and Satisfaction with Work Environment were significant in explaining actual reenlistment.

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by

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Major, Republic of Korea Army
B.S., Republic of Korea Military Academy, 1982

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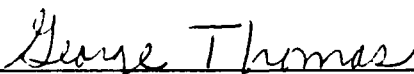
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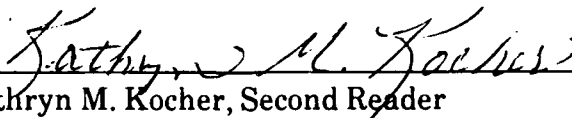NAVAL POSTGRADUATE SCHOOL
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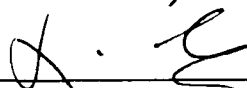   Kim, Byung Goo

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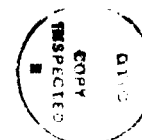   George W. Thomas, Thesis Advisor

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ABSTRACT

This thesis investigated an Army male second-termer's intended and actual reenlistment to identify key factors that significantly affect his decision to prolong his career in the Army using the 1985 DoD Survey of Officers and Enlisted Personnel conducted for the office of the Assistant Secretary of Defense (Force Management and Personnel). The sample was limited to those in paygrades E4-E6, with 5-10 years of service, and who had less than one year remaining in their commitment. Psychological, economic, organizational, and personal/demographic characteristics were investigated to determine their effect on the enlistees' career decision. A multivariate logit regression model was estimated utilizing these explanatory variables: Single/Wo/Dep., Single/W/Dep., Married/Wo/Dep., Black, Hispanic, YOS, Technical, Medical, Admin/Supply, Probability of Alternative, and Composite variables for satisfaction with work environment, and satisfaction with pecuniary benefits. The result indicates that there were significant differences in the factors affecting the intended and actual reenlistment decisions. Black, YOS, Medical, Probability of Alternative, Satisfaction with Work Environment, and Satisfaction with Pecuniary Benefits were significant in explaining intentions while Single/Wo/Dep., Married/Wo/Dep., YOS, Admin/Supply, and Satisfaction with Work Environment were significant in explaining actual reenlistment.

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I. INTRODUCTION

A. BACKGROUNDS

Since July 1973, the United States has relied exclusively on volunteers to meet its military manpower requirements. The military has attracted a higher level of recruit quality than was achieved during the draft. In fiscal 1990, for example, more than 90 percent of new recruits were high school diploma graduates. In addition, nearly 100 percent of the recruits scored average or above on the Armed Forces Qualification Test. Christopher Jehn, Assistant Secretary of Defense (Force Management and Personnel), said in an address to the American Legion Washington (D.C.) Conference, Feb. 25, 1991, that the U.S. force is now composed of people who are intelligent, well-educated, motivated and committed to the national defense, and the 500,000 U.S. troops deployed to the Persian Gulf have demonstrated how well the all-volunteer force works.

Since 1989, the remarkable changes in Europe and the Soviet Union have consistently showed that the Cold War is over. While the collapse of economies and communist political systems in Eastern Europe and the Soviet Union, the Warsaw Pact's dissolution, and Germany's unification in NATO have happened over the past two years, the focus of U.S. national strategy has shifted in response to the changing threat

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environment. According to the drastic change of the strategic environment, the U.S. is gradually reducing the responsive force size. Table 1 shows anticipated trends in DoD manpower as presented to the Senate Armed Services Committee by DoD in Feb, 1991.

TABLE 1

DoD MANPOWER

(End Strength in Thousands per FY)

ACTIVE	1987	1992	1993	1994	1995	CHANGE 1987-1995
Army	781	660	618	577	536	-245
Navy	587	551	536	516	510	-77
Marine	199	188	182	176	171	-28
Air Force	607	487	458	445	437	-170
Total	2,174	1,886	1,775	1,714	1,653	-521

Dick Cheney, Secretary of Defense, said in the statement to the Senate Armed Services Committee, Feb. 21, 1991, that the new strategy shifts its focus to regional threats and the related requirements for forward presence and crisis response from the containment of the Soviet Union to size and shape the

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future forces. He also said that the overall goal of the new strategy is to streamline and restructure U.S. forces within projected fiscal constraints.

However, Secretary of Defense Cheney has also indicated that maintaining a high-quality, well-trained force must be the top priority if the U.S. is to cope with potential regional threats. Retention of the ability to react to such threats in the uncertain times ahead will require continued dependence by the U.S. on strong--though smaller--active and reserve forces.

Therefore, the careerist's value in the contracting Army will be highlighted in view of his expertise, experience, and career intention. This thesis investigates the affiliation intention of the male enlisted Army second-termer, with one year or less remaining on his commitment, in order to identify key factors that significantly affect his decision to prolong his career in the Army.

B. RESEARCH OBJECTIVES

This study analyzes and compares the impacts of pecuniary and non-pecuniary factors on the affiliation decision of the Army male second-termer. Major research area includes following questions:

- How do the significant factors affect a "representative" Army male second-termer's reenlistment decision?

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- What are the significant pecuniary and non-pecuniary factors that affect an Army male second-termer's decision to reenlist or leave the service?

- How does military occupational specialty affect a second-termer's reenlistment decision?

- How applicable are studies of turnover theory to an Army second-termer's reenlistment decision?

C. DATA BASE

The data base used in this thesis was extracted from the 1985 DoD Survey of Officer and Enlisted Personnel conducted for the office of the Assistant Secretary of Defense (Force Management and Personnel) by the Defense Manpower Data Center (DMDC). This is a cross-sectional survey and one of several efforts conducted as part of the first large scale survey to provide information on the total population directly involved in active-duty military life.

DMDC specifies that this survey is particularly useful in studying:

- The response of military personnel to change in military compensation and benefits enacted in recent years;

- Factors affecting readiness and retention of active-duty personnel;

- Projected behavior of military personnel in response to possible changes in personnel management;

- Differences in career orientations, attitudes, and experiences between members of different subgroups, e.g. minorities, men and women;

- The demographic, household, familial and other characteristics of military personnel, couples, and families, including special groups such as dual-career couples and single-parent families;

- The impact of military policies on aspects of military and family life such as residential arrangements, continuing education, and spouse employment;

- Family well-being, including economic issues facing military families; and

- Demand for, use and perceived adequacy of programs providing family services

D.   SCOPE and LIMITATIONS

This research is limited to a sample of 11,323 enlisted male Army second-termers from approximately 132,000 active-duty officers and enlistees of all four services with four or more months of service who stayed in U.S. or overseas on 30 September 1984. This group was further limited to a smaller sample who were in their fifth to tenth year of service, in paygrades from E4 to E6, and who had less than one year remaining in their committment. The size of this final subsample is 564.

This study does not address the issue of reenlistees' quality. All enlistees qualified to reenlist are assumed to have the capability for successful job performance. The problem of selecting the right people is beyond the scope of this study.

E.   METHODOLOGY

Psychological, economic, organizational, and personal/demographic characteristics are investigated to determine their effect on the second-termer's decision within

the basic framework of turnover theory and previous research. The affiliation issue is a binary-choice problem. The affiliation construct will be tested by estimating two logistic regression models that use same independent variables and comparing the results with each other. One dependent variable is the likelihood of reenlistment (intention), and the other is actual reenlistment (from the longitudinal data).

F. ORGANIZATION OF THE STUDY

Chapter II includes the literature review. Various approaches and views on turnover behavior, both military and civilian, are discussed to provide the theoretical base for this research.

Chapter III presents the data and methodology. Research objectives of this study are developed, and the data base is explained in this section as well as the methods statistical analysis. The candidate explanatory variables are discussed and subsequently reduced to a final set to estimate the affiliation model. The dependent variables are also described here.

Chapter IV analyzes the reenlistment intention model and the actual reenlistment model. Their estimation results are compared. An analysis of the predictive accuracy of the models is included.

Chapter V summarizes the research and presents conclusions and recommendations derived from the analyses of the model

estimations. Significant manpower policy implications and recommendations for future research efforts are included here.

II. LITERATURE REVIEW

A. BACKGROUND

Employee turnover has been one of the most widely investigated organizational phenomena. A voluminous literature on turnover has been generated (see reviews by Bluedorn, 1982b; Mobley, 1982; Mobley, Griffeth, Hand, & Meglino, 1979; Muchinsky & Tuttle, 1979; Price, 1977). However, this research has been predominantly bivariate, static, non-cumulative, and based on no or incomplete conceptual models (Mobley & Meglino, 1979). Such atheoretical and simplistic research may explain the generally low predictions of employee termination. For example, observed correlations between job dissatisfaction - the most often used predictor - and turnover seldom exceed .40 (Locke, 1976).

Recently, major efforts have been made to find the best predictors of turnover behavior and specify the correct relationships between those predictors and turnover. Most researchers have used psychological, economic, organizational, social or personal characteristics to provide a basic conceptual framework (Porter and Steers, 1973). Additionally, many researchers have pointed out the variability of their findings among different groups of people.

Furthermore, economists have long been interested in the effects of non-pecuniary elements on the equilibrium prices that prevail in output and factor markets. In the labor market, non-pecuniary elements are thought to play a large role in the determination of equilibrium wage rates and the self-selection of individuals with dispersed tastes into various occupations. In 1982, Warner and Goldberg investigated the influence of non-pecuniary factors on reenlistment decisions of Navy enlisted personnel. They found that pay elasticities are inversely related to the incidence of sea duty, and a higher incidence of sea duty also reduces the reenlistment rate associated with any given level of pay.

One further point that needs to be emphasized here concerning turnover studies is that there is an underlying assumption, often inferred but sometimes stated, that the reduction of all turnover is a desirable goal. Such an assumption may be questioned on several grounds. First, from the individual's point of view, leaving an unrewarding job may result in the procurement of a more satisfying one. Second, from the organization's standpoint, some of those who leave may be quite ineffective performers, and their departure would open positions for better performers. Third, given the present state of technological flux, it may be necessary to accept certain levels of turnover as the price for rapid change and increased efficiency.

B. TURNOVER RESEARCH

For the purposes of this thesis, turnover is defined as the choice made by an individual to leave active duty at the end of obligated service. Turnover is considered a voluntary action and does not include mandatory or medical separations from military service.

Many researchers have investigated employee turnover from a psychological viewpoint. On the whole, their conclusions point to the importance of job satisfaction as a central factor in turnover. Reviews of the literature on the relationship between employee turnover and job satisfaction have reported a consistent negative relationship (Brayfield & Crockett, 1955; Herzberg, Mausner, Peterson, & Capwell, 1957; Vroom, 1964; Schuh, 1967; Porter & Steers, 1973; Locke, 1975). Locke (1976) noted that while the reported correlations have been consistent and significant, they have not been especially high (usually less than .40).

Based on their extensive review of over 60 studies, Porter and Steers (1973) pointed out four categories of "internal factors" (i.e., variables related to an individual's interaction with the work situation) affecting overall job satisfaction and that could be involved in turnover behavior; (a) organization-wide factors (pay and promotion, organization size), (b) immediate work environment factors (supervisory relations, receipt of recognition and feedback, work unit size, peer group interactions), (c) job content factors (the

overall reaction to job content, task repetitiveness, job autonomy and responsibility, role clarity), and (d) personal factors (age, tenure, similarity of job with vocational interest, personal characteristics, family size and responsibilities). It should be noted that this analysis omitted crucial "external" factors pertaining to such things as economic conditons, the availability of specific job opportunities, and various unavoidable causes of withdrawal (e.g., pregnancy, illness, etc.).

Porter and Steers (1973) also discussed the interaction between 'met expectation' and turnover. That is, whatever the composition of the individual's expectation set, it is important that those factors be substantially met if the employee is to feel it is worthwhile to remain with the organization. Doubling the salary of a man who is genuinely disinterested in money may have little effect in ensuring his continued participation. They also asserted that, through increased communications concerning the nature of the job and the probable potential payoffs for effective performance, the organization can increase the present or potential employee's accuracy and realism of expectations and decrease the likelihood of his forming unrealistic expectations. In conclusion, Porter and Steers suggested that more emphasis should be placed on the psychology of the withdrawal decision process.

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Ajzen and Fishbein (1977) examined researches on the relation between attitude and behavior in light of the correspondence between attitudinal and behavioral entities, considering that there were many reports of rather low or nonsignificant relations between attitudinal predictors and behavioral criteria. They contended after a review of available empirical researches that strong attitude-behavior relations are obtained only under high correspondence between at least target and action elements[1] of the attitudinal and behavioral entities.

Hom, Katerberg, and Hulin (1979) examined the efficiency of three approaches to the prediction of turnover in a sample of National Guard members. They compared the predictive validity among job satisfaction, Fishbein's behavioral intention model[2], and Porter's organizational commitment model in predicting reenlistment intention and behavior. They concluded that, consistent with the findings of Newman (1974)

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[1]Fishbein's theory (Ajzen & Fishbein, 1973; Fishbein, 1967; Fishbein & Ajzen, 1975) was based on the assumption that attitudinal and behaviorl entities consists of four elements: the action, the target at which the action is directed, the context in which the action is performed, and the time at which it is performed. 'Correspondence' means that the attitudinal entity is identical in all four elements with the behavioral entity. For purposes of the article, they assumed that examination of the target and action elements is sufficient.

[2]He argued that a single behavior is determined by the intention to perform the behavior in question and a person's intention is in turn a function of his attitude toward performing the behavior and of his subjective norm (the perception of whether or not most people who are important to him think he should perform the behavior).

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and Porter et al. (1974), the Fishbein model and organizational commitment predicted reenlistment intention and behavior more accurately than did job satisfaction, though all three approaches yield highly accurate predictions of turnover. Such generalizability is encouraging because some researchers have discovered dissimilarities in how part-time workers (such as National Guard members) and full-time workers respond to their jobs (Logan, O'Reilly, & Roberts, 1973; Terborg & Miller, 1977).

On the other hand, Mobley (1977) asserted that most studies of turnover examine the direct relationship between job satisfaction and turnover and a more complete understanding of the psychology of the withdrawal decision process requires investigation beyond the replication of the satisfaction-turnover relationship. Toward this end, he presented a model of the employee withdrawal decision process that identifies possible intermediate linkages in the satisfaction-turnover relationship. His turnover decision process model consisted of following ten steps:

(1) Evaluation of existing job

(2) Experienced job satisfaction-dissatisfaction

(3) Thinking of quitting

(4) Evaluation of expected utility of search and costs of quitting

(5) Intention to search for alternatives

(6) Search for alternatives

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(7) Evaluation of alternatives

(8) Comparison of alternatives vs. present job

(9) Intention to quit/stay

(10) Quit/stay

Mobley stated that these steps are heuristic rather than descriptive. That is, there may well be individual differences in the number and sequence of steps in the withdrawal process, in the degree to which the process is conscious, and in the degree to which the act of quitting is impulsive rather than based on a subjectively rational decision process. However, the value of this model is to guide thinking and empirical research toward a valid descriptive model that can account for such individual differences.

Mobley, Horner, and Hollingsworth (1978) simplified the Mobley (1977) study into a reduced seven-construct model which included such factors as age/tenure, job satisfaction, probability of finding an acceptable alternative, thinking of quitting, intention to search, intention to quit, and quitting. Though a review of analyses and data reported by Mobley and his associates revealed some limitations[3] that may

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[3]Mobley et al. (1978) tested data from 203 full-time employees of a hospital. There are three limitations in their data and analyses of concern. First, the low base rate of turnover (10%) restricts variance in the criterion and the magnitude of relations with predictors. Second, they relied on interpreting significance and magnitude of standardized regression coefficients to evaluate model validity though considerable collinearity existed among predictors. Third, the pattern of results from their regression analyses was not entirely consistent with the reduced seven-construct model.

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underestimate model validity, they have contributed a model that is conceptually rich and helpful for understanding the organizational withdrawal process. Their results show that the variables which link job attitude (satisfaction, and commitment) with turnover are most directly related to withdrawal cogintions, and only indirectly related to actual turnover.

Miller, Katerberg, and Hulin (1979) investigated the validity of the Mobley, Horner, and Hollingsworth (1978) simplified turnover model in a predictive design with data gathered from two independent military samples (samples of 235 and 225 National Guard members). They collapsed the seven variables of the Mobley, et al. model into the following four more general constructs; withdrawal behavior (turnover), withdrawal cognitions (intention to quit, intention to search, thinking of quitting), job satisfaction, and career mobility (age/tenure, probability of finding an acceptable alternative). They found that withdrawal cognition was the strongest and most consistent predictor of turnover, while career mobility and job satisfaction influenced turnover only through their influence on withdrawal cognition. They found validity for this reduced model, although probability of finding an acceptable alternative had no direct effects on search and quitting intentions.

Mobley, Griffeth, Hand, and Meglino (1979) proposed a more comprehensive model that considers organizational, individual,

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and economic-labor market determinants of the turnover decision process depicted in the Mobley 1977 model. They conceived the attraction of the present job to differ from job satisfaction. That is, an employee may be dissatisfied with his or her current job duties but nevertheless remain in the job because the job is expected to improve or lead to more satisfying organizational roles in the future (e.g., promotion, transfer, graduation from apprenticeship) (Baysinger & Mobley, 1982; Mobley, 1982). In other words, job attraction is future oriented whereas satisfaction is present oriented. This model retained intention to quit as the immediate precursor to actual turnover. Intention to quit was determined by job satisfaction, attraction-expected utility of the present job, and attraction-expected utility of alternatives. These determinants were in turn moderated by the centrality of nonwork values or the nonwork consequences of quitting.

Hom, Griffeth, and Sellaro (1984) fully investigated the validity of Mobley's (1977) original model, and they empirically verified the Mobley (1977) model using hierarchical regression analyses, although the evidence was not unequivocal. They indicated that ambiguity in conceptual and operational definitions of perceived alternatives plagues numerous turnover studies. That is, some studies required respondents to estimate the general availability of alternatives in the labor market (Arnold & Feldman, 1982;

Martin, 1979; Price & Mueller, 1981) or to describe the overall quality of external alternatives (Bluedorn, 1982a; Farrell & Rusbult, 1981) without making reference to any specific alternatives. Further, they asserted that some studies which identified specific alternatives and required their descriptions lacked precision in their measurement. That is, the expected value of a general class of alternatives (e.g., alternative employment or full-time student) is usually measured rather than the expected value of a particular member of this broad class (e.g., a specific job or school). As examples, they indicated that Hom (1980), Mobley, Hand, Baker, and Meglino (1979), Parker and Dyer (1976), Schneider (1976), Stahl and McNichols (1981), and Stahl (1980) had military personnel describe a civilian job without specifying (or having them specify) a particular job as their alternative to military service. In conclusion, they demanded that further turnover research should directly assess employees' perceptions of alternative jobs that are direct products of their search efforts (or are received unsolicited from other employers) and compare the attractiveness of actual job offers with that of the present job (cf. studies of organizational choice [Wanous, Keon, & Latack, 1983], in which respondents describe specific job offers).

Arnold and Feldman (1982) found that while turnover is significantly influenced by age, tenure, job satisfaction, organizational commitment, perceived job security, and

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intention to search for an alternative position, all of the personal, cognitive, and affective variables didn't influence turnover behavior through their impact on intentions to change positions. They also discovered that the most powerful model of turnover behavior (R=.44) contained four significant individual predictor variables: tenure, job satisfaction, perceived job security, and intention to search for an alternative position, and that no support was found for a hypothesized interaction between intentions and perceived existence of alternatives in influencing turnover behavior.

While most researchers treated all voluntary leavers as being similar, Dalton, Krackhardt, and Porter (1981) suggested that examining avoidable and unavoidable turnover could improve understanding and prediction of turnover. Abelson (1987) discovered that unavoidable leavers (severe ill, death etc.) and stayers were found to be no different from each other, whereas both groups were significantly different from avoidable leavers on levels of satisfaction, organizational commitment, job tension, and withdrawal cognitions (thinking of quitting, intent to search, probability of finding an acceptable job elsewhere, and intent to leave). Abelson suggested that those researchers examining turnover should at least determine whether their data differentiates stayers and unavoidable leavers from avoidable leavers on the variables of interest to get the "reality" of the situation and better explain turnover.

C. MILITARY RETENTION RESEARCH

Retention of skilled and experienced enlisted personnel has consistently been a central issue of manpower policies. We can understand this in terms of two perspectives. One perspective, from the economist's viewpoint, is that the services' heavy investment in recruiting, training, and paying enlistees during their stay in the service is irreversible if an enlistee separates after a short period. In particular, the cost to the government of losing a skilled enlistee after the second term may be quite high. Secondly, from the organizational viewpoint, after their terms of obligation, enlistees with plenty of experience and enhanced capability to deal with problems can play a pivotal role in the relationship between officers and inexperienced enlistees. Therefore, their early eparation may weaken the organizational structure of the services.

Previous research has shown that intentions are closely and systematically related to subsequent reenlistment behavior (Brunner, 1971; Chow and Polish, 1980). Hiller (1982) examined the influences of compensation, promotion, location, and job satisfaction variables in explaining second-termers' reenlistment in the four services, finding that pay and promotion variables are most consistently and significantly related to reenlistment intentions, and other financial, location, and job satisfaction variables have varying degrees of importance in the reenlistment decision. Further, he

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investigated the four reenlistment incentives for second-termers: a reenlistment bonus, a guaranteed location of choice on next assignment, a two-year reenlistment period, and a 50 % change in the chance of promotion, finding that the influences of all incentives except promotion declines for those people further along in their service career. Also, location appears to be a key incentive.

Doering and Grissmer (1985) found that several studies (Warner, 1979; Gotz and McCall, 1980; Hiller, 1982; Stolzenberg and Winker, 1983; Warner and Goldberg, 1984) concluded that retention depends on compensation. They found that retention rates are sensitive both to the present and future expected value of compensation, and that the longer the tenure after 10 years of service, the greater this sensitivity. They further pointed out that besides the emphasis of research on compensation, additional variables such as location, family separation, and attitudinal variables have been included to explain retention rates along with the standard pay and demographic variables (Chow and Polish, 1980, 1982; Warner and Goldberg, 1982).

While most researchers indicated that intention to reenlist has the most direct and important effects on actual reenlistment, Motowidlo and Lawton (1984) tested several models to find the best predictors and process models of the changing level of intentions. They discussed how job satisfaction affects the expectancy of reenlistment or leaving

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and finally determines reenlistment intention, concluding that turnover may be more effectively managed by improving job conditions, supervisory practices, pay policies, and other organizational features to prevent the feeling of dissatisfaction from surfacing in the first place.

Lamboni (1987) tested a model which can be used to explain affiliation intentions of first-term enlistees in all the services by hypothesizing a turnover model derived from previous research. He included candidate variables in five categorical groupings: demographic, tenure, cognitive/affective orientation, income and economic incentives, and perception of employment alternatives. He found that five explanatory variables consistently influenced the reenlistment decision in each of the four services: race, household composition (number of dependents), level of outstanding debts, the likelihood of finding suitable civilian employment, and the composite variable, quality of military service life (a composite measure of absolute satisfaction levels of the serviceman with his job, job environment (co-workers, working conditions, autonomy, supervisors, etc.), and the family environment at his military station (available medical/dental facilities, housing, etc.).

O'Donohue (1988) examined factors that influence a male, first-term enlisted reservist's decision to remain in the Selected Marine Corps Reserve. Using the data from the DoD's 1986 Reserve Components Survey, he found that age, reserve

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income, paygrade, received bonus, satisfaction with retirement, and civilian job-related training variables are significant in explaining retention of prior or non-prior service reservists.

Laura Nell Edwards (1989) investigated the relationship of reenlistment decisions of second-term enlisted women in the military to their marital and dependent status, using the data of all services from the DoD Survey of Officer and Enlisted Personnel. She examined six subgroups (all males, all females, single women with children, single women without children, married women with children, and married women without children). Conducting logistic regression analyses for each group, she found that such variables as minority status, perception of civilian alternatives, and paygrade are significant for all groups, and such variables as occupational category, satisfaction with working environment (job, co-workers, work conditions, training, security), satisfaction with military environment (PCS moves, assignment stability, pay/allowances, retirement plan, family environment), satisfaction with military benefits (medical, dental, commissary, VEAP benefits), and military spouse are significant for some groups.

Randall (1989) examined factors which influence the retention of male noncommissioned officers and staff NCOs (grades from E4 to E6 with four to twelve years of service) in the Selected Marine Corps Reserve. He limited the sample size

to 764 enlistees between E4 and E6 with 4-12 YOS, and divided the sample into four subgroups: Prior Service Single (PSS), Prior Service Married (PSM), Non-prior Service Single (NPSS), and Non-prior Service Married (NPSM). The responses to the dependent variable (reenlistment intention) ranged from 1 (no chance) to 11 (certain). He categorized those respondents who answered from 1 to 4 as "leavers", and those respondents who answered from 7 to 11 as "stayers". He found the following factors to be significant for each subgroup of Slected Marine Corps Reserve: monetary aspects and minority for the NPSM group; age, type of military job, similarity of military and civilian jobs, family influences, and intrincic rewards from Reserve participation for the PSM group; monetary and perceptual/satisfaction aspects of Reserve participation for the NPSS group; and age, retirement benefits for the PSS group.

III. DATA AND METHODOLOGY

A. RESEARCH OBJECTIVES

The objective of this research is to develop and estimate a model of the reenlistment decision that can be used to test the impact of pecuniary and non-pecuniary factors on the affiliation intention of the enlisted Army male second-termer. This study is based on turnover theory and on previous research, both military and civilian. Major research questions of this study are as follows:

- How do the significant factors affect a "representative" Army male second-termer's reenlistment decision?

- What are the significant pecuniary and non-pecuniary factors which affect an Army male second-termer's decision to reenlist or leave the service?

- How does military occupational specialty affect a second-termer's reenlistment decision?

- How applicable are studies of turnover theory to an Army second-termer's reenlistment decision?

B. DATA BASE

The data base used in this research was the *1985 DoD Survey of Officer and Enlisted Personnel (1985 Member Survey)* administered by the Defense Manpower Data Center. This survey was conducted for the the Office of the Assistant Secretary of Defense (Force Management and Personnel) (OASD(FM&P)) to fulfill the needs for information on the total population

directly involved with military life in the active-duty Services.

The population from which the 1985 Member Survey was sampled consists of approximately 132,000 active-duty officers and enlisted personnel in all four services with four or more months of service who were stationed in the United States (CONUS) or overseas on 30 September 1984. Most of the questionnaires were completed in March 1985, meaning that the respondents in the Member Survey are those who, at the time of survey administration, had completed 10 or more months of service. In addition, the 1985 DoD Survey of members has been matched with personnel records to obtain information on subsequent behavior of respondents. In the longitudinal matched member file, the variable 'STATUS' (remained on Active Duty in 1989) was appended to the original survey file.

Two questionnaire forms were used in the data collection for the 1985 Member Survey, one for officers and a second for enlisted personnel. Both forms of the 1985 Member Survey are virtually identical, with the differences primarily in terminology and the inclusion of some items which pertain specifically to officers and others to enlisted personnel. The Users Manual and Codebook (Doering, et al., 1986) provided documentation for the data base.

The contents of the Member Survey questionnaire consists of the following subject areas:

- *Military Information:* Service, Paygrade, Military occupation (MOS), Term of enlistment, and End term of service (ETS)

- *Present and Past Location:* Length of stay, Expected stay, Problems encountered both at the present location and in moving to the location

- *Reenlistment and Career Intentions:* Probed respondent's future orientation by asking expected years of service, Expected paygrade, Probable behavior under different management options

- *Individual and Family Characteristics:* Sex, Age, Marital status, Aspects of educational attainment, Number and ages of dependents, Handicapped dependents

- *Military Compensation, Benefits and Programs:* Benefits being received by the respondent, Availability and level of satisfaction with a broad range of family programs

- *Civilian Labor Force Experience:* Focused on the household's civilian work experiences

- *Family Resources:* Household's earnings, Non-wage or salary sources of earnings

- *Military Life:* Attitudes about various aspects of military life (Pay, Allowances, Interpersonal environment, and Benefits)

Of all four Services, the Army showed the lowest response rates (65% of officers and 59% of enlisted personnel roughly compared to 82% of officers and 75% of enlisted personnel in other Services). It is likely that the greater dispersion of Army personnel outside of the United States, compared to the other Services, combined with transfers both across units and locations, partly explains the lower Army response rate.

C. SCOPE and LIMITATIONS

This study will analyze the effects of pecuniary and non-pecuniary elements on a male second-termer's decision about

prolonging affiliation with the Army. The second-termers'
expertese and experiences should not be wasted by their non-
retention. They should be retained to achieve training cost-
effectiveness and to increase the readiness and efficiency of
the Army's operation.

This study is limited to a sample of 11,323 male Army
second-termers from the '1985 DoD Survey of Officers and
Enlisted Personnel'. This group of male second-termers was
reduced further to those who were in their fifth to tenth year
of service and had achieved paygrades from E4 to E6, and who
had less than one year remaining in their second terms of
service. There were 564 second-termers included in the final
sample for this study.

A representative individual from this sample may be
characterized as follows:

- Paygrade: E5

- Current Age: 26

- YOS: 7 years

- Education: High school graduate

- Family Status: Married with dependents

This study does not address the issue of quality of the
reenlistees. All enlistees who are within one year of
completing their initial obligation are assumed to have the
capability for successful job performance. Therefore, the
issue of selecting the best reenlistees is beyond the scope of
this study.

D. METHODOLOGY

Researchers have investigated many potentially significant factors to explain military service affiliation based on turnover theory. They have found that intention to quit is frequently the direct and immediate precursor to actual turnover. Additionally, previous researches show us that psychological, economic, organizational, and personal/demographic characteristics provide a basic conceptual framework for turnover behavior and they can affect military affiliation intention and actual retention behavior individually and simultaneously. Therefore, the model used in this thesis will be based on turnover theory and previous researches, both military and civilian.

Personal/Demographic

Organizational Characteristics

Economic Incentives

Cognitive/Affective Orientation

Intention to Quit —— Turnover
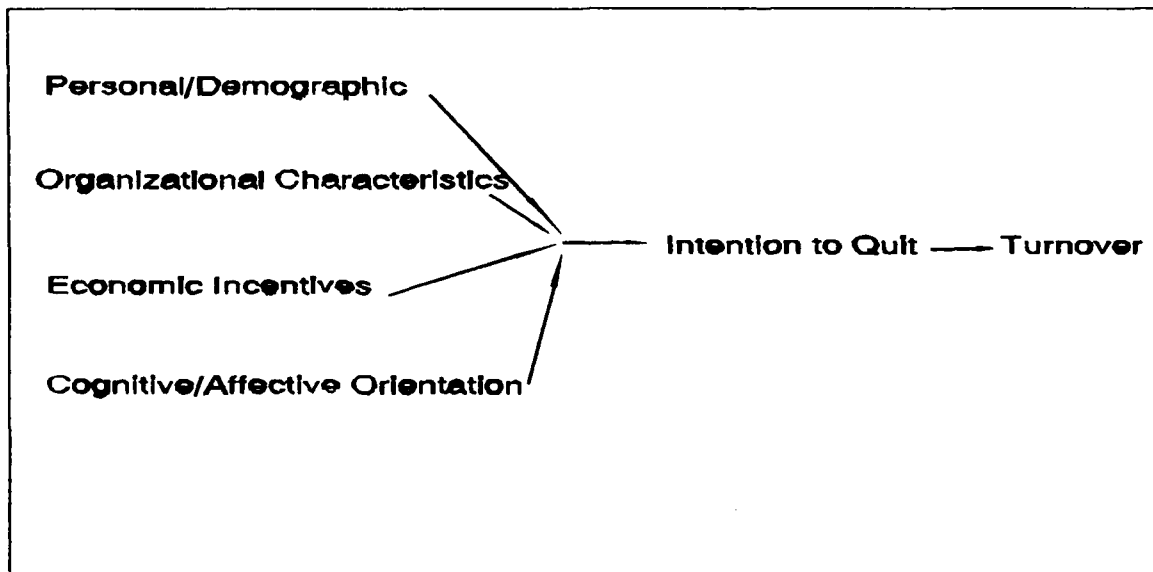
Figure 1: This is a hypothesized turnover model.

This model will be tested using Army enlistees' responses to the *1985 DoD Survey of Officer and Enlisted Personnel* administered by the Defense Manpower Data Center. The

candidate independent variables for this model were grouped into four categories as follows:

- Personal/Demographic: Biographical/Individual elements that affect the Army enlistee's military affiliation intention in accordance with different group characteristics

- Organizational (Military) Characteristics: Organization-wide elements specific in the military that explain the individual's commitment level in the Army

- Economic Incentives: Elements in the military and civilian sectors that affect the relative financial situation of the Army enlistee with respect to other individuals and/or families

- Cognitive/Affective Orientation: Elements that show the individual's psychological satisfaction level with his job in the Army

Two dependent variables will be studied. One is the respondent's affiliation intention variable regarding prolonged service in the Army derived from the response to the following survey question:

"How likely are you to reenlist at the end of your current term of service?"

Therefore, the respondent's decision point is whether to:

- reenlist, or

- leave active duty Service.

The other dependent variable is actual reenlistment between the survey date and June 30, 1989. Therefore, the affiliation construct will be tested by estimating two types of logistic regression models. As noted above, the dependent variables in comparative models will be (1) reenlistment

intention, and (2) actual reenlistment results in the longitudinal data.

E. STATISTICAL ANALYSIS

The logit model is based on the cumulative logistic probability function. The logit model is specified as

$$Pi = 1 \ / \ 1+e^{-(a+bXi)}$$

or $log(Pi/(1-Pi)) = a + bXi$

In this notation, e represents the base of the natural logarithms. Pi is the probability that an individual will make a certain choice, given Xi (a vector of individual characteristics).

Because the dependent variable (the reenlistment decision) is dichotomous, the logit model was selected to estimate the probability that a male second-termer will choose to remain in the Army after the second term of enlistment. Maximum-likelihood estimation methods are utilized to estimate the logit model.

F. DEPENDENT VARIABLES

1. REENLISTMENT INTENTION (DEPENDENT VARIABLE 1: REINTENT)

Reenlistment intention was derived from the variable 'E30' (Probability of reenlistment at the end of term) where the respondent was asked:

- *How likely are you to reenlist at the end of your current term of service?* Assume that all special pays which you currently receive are still available. Mark one.

The frequency of responses were distributed across the following codes:

TABLE 2

FREQUENCY DISTRIBUTION of REENLISTMENT INTENTION

CODE	PROBABILITY	DESCRIPTION
-8		Don't know
-6		I plan to leave service
-5		I plan to retire
-1		Question not answered
1	0/10	No chance
2	1/10	Very slight possibility
3	2/10	Slight possibility
4	3/10	Some possibility
5	4/10	Fair possibility
6	5/10	Fairly good possibility
7	6/10	Good possibility
8	7/10	Probable
9	8/10	Very probable
10	9/10	Almost sure
11	10/10	Certain

The dependent variable 1 (REINTENT) was formed by selecting two ends groups and deleting the undecided middle groups in the frequency distribution as follows:

- Definite reenlistment intention: E30 = 9 or 10 or 11

- Definite non-reenlistment intention: E30 = -6 or 1 or 2 or 3

- Undecided intention: 3 < E30 < 9

Table 3 provides a statistical summary of reenlistment intentions of the final survey sample by reenlistment or non-reenlistment intention groups.

TABLE 3

REENLISTMENT INTENTION (REINTENT)

	NUMBER	%
Reenlistment	302	53.6
Non-Reenlistment	262	46.4
Total	564	100

2. ACTUAL REENLISTMENT RESULT (DEPENDENT VARIABLE 2: REENLIST)

Actual reenlistment was derived from the 1985 *DoD OFFICER and ENLISTED PERSONNEL SURVEY MATCHED MEMBER FILE*. This file was created to obtain information on the subsequent reenlistment behavior of respondents. It indicated whether or not they remained on active duty in 1989.

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Eight variables have been appended to the original survey file. The variable named 'STATUS' is one of them, and is described by following codes:

- 1 = remained on Active Duty (AD) in 1989
- 2 = left AD, joined Reserves by 1989
- 3 = left AD, did not join Reserves by 1989
- 4 = retired from AD by 1989

The variable 'STATUS' was used to form the dependent variable 2 (REENLIST) by assigning a value of "1" to code 1 and a value of "0" to other responses. Table 4 shows a statistical summary of actual reenlistment for the final survey sample.

TABLE 4

ACTUAL REENLISTMENT (REENLIST)

	NUMBER	%
Reenlistees	311	55.1
Non-Reenlistees	253	44.9
Total	564	100

3. CROSSTABULATION OF INTENDED AND ACTUAL REENLISTMENT

The differences between the two models will be discussed after they are estimated. Table 5 shows a crosstabulation of actual and intended reenlistment. It shows that about 79% of

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respondents within one year of end of their contract who intended to reenlist in the Army in 1985 actually selected to reenlist (238 out of 302). About 28% (73 out of 262) planned to leave but actually reenlisted.

TABLE 5

CROSSTABULATION OF INTENDED AND ACTUAL REENLISTMENT

	REENLIST	NON-REENLIST	TOTAL
REINTENT	238	64	302 (53.5)
NON-REINTENT	73	189	262 (46.5)
TOTAL	311 (55.2)	253 (44.8)	564 (100)

Note: percent of total in parentheses

G. EXPLANATORY VARIABLES

A broad spectrum of candidate variables for estimating the turnover decision have been identified in previous research. As shown in the literature review, major explanatory variables have included psychological, economic, organizational, and demographic factors. The candidate variables discussed below will be tested for their significance in predicting and explaining both an Army male second-termer's reenlistment intention and his actual reenlistment behavior.

The screening of candidate variables which are not fundamental to the theory, or are subject to large measurement errors, or are similar measures of a common variable is very important in avoiding model misspecification and achieving an

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accurate estimation of the model. Several methods have been used to select the correct explanatory variables and specify the model correctly. High simple bivariate correlation between the candidate variables, insignificant 't-test' score of the candidate variable, too many missing values of the candidate variable from the frequency analysis, and insignificant chi-square scores are the indications used for screening these variables. However, the results from applying these criteria were reviewed with respect to turnover theory and previous research to avoid model misspecification. Frequencies for the candidate explanatory variables are included in Table 6.

TABLE 6

FREQUENCY ANALYSIS OF EXPLANATORY VARIABLES

VARIABLE	NUMBER	%
PAYGRADE		
E4	135	23.9
E5	323	57.3
E6	106	18.8

TABLE 6 (Continued)

AGE

21-25	263	46.6
26-30	232	41.1
31-40	69	12.3

YOS

5	32	5.7
6	151	26.8
7	167	29.6
8	107	19.0
9	78	13.8
10	29	5.1

RACE

Black	195	34.6
Hispanic	73	13.0
White	272	48.2
Others	24	4.2

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TABLE 6 (Continued)

EDUCATION

Below HSDG	24	4.2
HSDG	403	71.5
Above HSDG	137	24.3

FAMILY STATUS

Single/WO/Dependents	117	20.7
Single/W/Dependents	16	2.8
Married/WO/Dependents	71	12.6
Married/W/Dependents	360	63.9

MOS

Combat	199	35.3
Technical	174	30.9
Medical	46	8.2
Admin/Supply	144	25.6

PROBABILITY OF ALTERNATIVE

E92	453	80.3

1. Personal/Demographic Variables

Most researchers have included such variables as age, education level, race, marital status, and number of dependents in their analyses on the affiliation decision. DMDC integrated marital status and the number of dependents variables into a single variable, household composition (HHC1). This study uses the variable 'HHC1'. Table 7 lists these candidate demographic variables and their value codings.

TABLE 7

DEMOGRAPHIC VARIABLES

VARIABLE	QUESTION ID	VALUE CODING
Current Age	E35	Continuous
Education	E42	Continuous
Household Composition	HHC1	Dummy variables: Single/Wo/Dep. Single/W/Dep. Married/Wo/Dep. Married/W/Dep.
Race	RACE4	Dummy variables: Black Hispanic White/Others

Though current age (E35) was selected as a candidate variable, it was deleted from the final model since it showed a high correlation (.44) with the variable 'YOS'.

Education (E42) was also initially selected to be a candidate variable, and divided into categories of below high school degree and high school degree or above. However, due to lack of variation in the frequency analysis (High school degree or above: 95.8%).

Race was divided into three subgroups: black , Hispanic and white/other. The frequency distribution of race (RACE4) showed that the sample was 34.6% black, 13.0% Hispanic, and 52.4% white and others. Most military research has found race to be a significant variable in explaining affiliation and it was included in the model.

2. Organizational (Military) Characteristics

As noted in the literature review, the more committed to his organization, the more likely the individual is to stay in the military. The 1985 DoD Survey includes some variables that describe military background characteristics, such as, total months of active duty (E6), paygrade (E5), and military occupation (EOCC2). Table 8 describes two of these candidate organizational characteristics variables (YOS and MOS) and their value codings. Table 6 includes the paygrade distribution for the sample.

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TABLE 8

ORGANIZATIONAL (MILITARY) CHARACTERISTICS

VARIABLE	QUESTION ID	VALUE CODING
YOS	E6	Continuous
MOS	EOCC2	Dummy variables Combat Technical Medical Admin/Supply

The total months of active duty service (E6) explains how the respondents committed themselves to the military, and this will be used as an independent variable to represent organizational commitment. This study deals with second-termers, so the total months of active duty (E6) ranges from five to ten years.

Enlisted occupation (EOCC2) deals with work specialties in the army. The more transferable to the civilian society a respondent's specialty is, the more likely he is to leave the Army. The numerous occupational specialties of the Army were reduced to four groups: combat, technical, medical, and admin/supply. The combat group was used as a base case.

3. Economic Incentives

The 1985 DoD Survey includes some economic incentive variables, such as probability of a good civilian job (E92),

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expectation of family better off in a civilian job (O108104D),
satisfaction with pay and allowances (E105E), satisfaction
with family environment (E105F), and satisfaction with
retirement benefits (E105H). However, the expectation of
family better off in a civilian job (O108104d) was deleted
from the candidate variables, since it had too many missing
values (44% of sample). Also, the three satisfaction variables
(E105E, E105F, E105H) were deleted from the following
candidate varible list, because they are included in the
factor analysis. Table 9 shows the candidate economic
incentive variable, probability of (good) alternative, and its
value coding.

TABLE 9

ECONOMIC INCENTIVES

VARIABLE	QUESTION ID	VALUE CODING
Probability of Alternative	E92	Dummy variable 0 = Not a good chance 1 = Good chance

As noted in the literature review, the external factors
pertaining to such things as economic conditions and the

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availability of specific job opportunities as well as the internal factors affecting overall job satisfaction can affect turnover behavior.

The availability of specific job opportunities was measured by the survey question on the probability of alternative (E92), which asked the respondent how likely he would be to find a good civilian job if he were to leave the Army now and try to find a civilian job.

4. Cognitive/Affective Orientation

As noted in the literature review, whatever the composition of the individual's expectation set, it is important that those factors be substantially met if he is to remain with the organization. The 1985 DoD Survey contaiאs a 'Met Expectation' variable (0108104A), which asked the respondent about the similarity of military life compared to his expectations. However, the 'Met Expectation' variable was deleted from the candidate variable list to prevent misspecification error, since the sample respondents are assumed to have already made any adaptations necessary to their expectations by the end of his second term, and, as a result, 'Met Expectation' would not play much role in the respondent's affiliation decision. Also, this variable had a high correlation with the factor 'Work Environment' (.41).

The 1985 DoD Survey also includes a number of questions (E105A--E105R) revealing the respondent's satisfaction level with his military life observed from various points of view.

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Factor analysis was used to develop some underlying dimensions and reduce the number of variables to a smaller group of factors. These underlying factors have been divided into two separate groups: work environment and pecuniary benefits.

As a result of the factor analysis, two factors were formed from the respondent's responses to the survey questions regarding the satisfaction level of military life. The responses to those questions were on a scale of 1-5 from very *dissatisfied* to very *satisfied*.

Table 10 show the 11 components of factor 1 named 'Work Environment'.

TABLE 10

FACTOR 1 (WORK ENVIRONMENT)

QUESTION ID	DESCRIPTION
E105A	Satisfaction with personal freedom
E105B	Satisfaction with acquaintances/friendships
E105C	Satisfaction with work group/co-workers
E105D	Satisfaction with assignment stability
E105G	Satisfaction with move frequency
E105I	Satisfaction with opportunity to serve one's country
E105J	Satisfaction with current job
E105K	Satisfaction with promotion opportunities
E105L	Satisfaction with job training/in-service education
E105M	Satisfaction with job security
E105N	Satisfaction with working/environmental conditions

Similarly, the factor 'Pecuniary Benefits' comprises the respondent's answers to the following questions as shown in Table 11:

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TABLE 11

FACTOR 2 (PECUNIARY BENEFITS)

QUESTION ID	DESCRIPTION
E105E	Satisfaction with pay and allowances
E105F	Satisfaction with family environment
E105H	Satisfaction with retirement benefits
E105O	Satisfaction with post service educational benefit
E105P	Satisfaction with medical care
E105Q	Satisfaction with dental care
E105R	Satisfaction with commissary services

H. HYPOTHESIZED SIGNS OF EXPLANATORY VARIABLES' COEFFICIENTS

One of the uses of econometrics is the testing of alternative theories through the use of quantitative evidence, such as regression analysis. In this study, the hypothesized model is based on turnover theory. The testing of hypothesized signs of explanatory variables' coefficients can be used to verify the model. Of course, testing the coefficients' signs is not the only method of verification. The statistical significance of the estimates of coefficients would have to be investigated before any final conclusions are drawn. Table 12

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contains the hypothesized coefficients' signs for the selected
12 independent variables.

TABLE 12

HYPOTHESIZED SIGNS OF EXPLANATORY VARIABLES

EXPLANATORY VARIABLE	HYPOTHESIZED SIGN
Single/Wo/Dependents	−
Single/W/Dependents	+
Married/Wo/Dependents	+
Black	+
Hispanic	+
YOS	+
Technical	−
Medical	−
Admin/Supply	+
Probability of Alternative	−
Work Environment	+
Pecuniary Benefits	+

People tend to want more stability in their jobs as they
become older or have more dependents to care for. On the other

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hand, younger people with less responsibility for their family want to test their capabilities beyond the present boundary of their jobs. Therefore, categories of HHC1 other than single without dependents were expected to have a positive relationship with affiliation.

Minorities are likely to find more sense of equality and promotion possibility in the military than in civilian organizations. Thus, 'Black' and 'Hispanic' respondents were assumed to be more likely to reenlist/intend to reenlist than white respondents.

The more transferable to the civilian job a respondent's specialty is, the more likely he is to leave the Army. So, the technical and medical group were expected to have a negative relationship with affiliation, compared to the combat occupational group.

High probability of finding a good civilian job tends to make enlistees search for alternatives and quit the military service. Therefore, the variable "Probability of Alternative" was expected to have a negative relationship with affiliation.

The greater the monetary rewards for the respondent, the more committed to the military he is expected to be. Thus, the factor 'Pecuniary Benefits' was expected to have a positive relationship with affiliation.

A respondent who selects the military as his career is anticipated to be more satisfied with such aspects of the working environment as job security, human relations , self-

achievement through promotion, and serving his country etc., than a soldier who leaves or plans to leave the Army. Thus, the factor 'Work Environment' was expected to have a positive relationship with affiliation.

This non-pecuniary factor was expected to have a stronger positive relationship than the pecuniary factor with the dependent variables because pay and benefits are similar for the members of the sample who are in a small range of pay grades.

IV. ANALYSIS OF REENLISTMENT INTENTION AND ACTUAL REENLISTMENT

A. MODEL ESTIMATION FOR REENLISTMENT INTENTION

1. MODEL ESTIMATION RESULTS

The logit estimation results of the reenlistment intention model for each independent variable are shown in Table 13. These results show that the signs of the coefficients of three independent variables (married without dependents, technical occupation, and medical occupation) differed from the hypothesized signs, but only one of these was statistically significant at the .10 level (medical occupation).

The variable 'Married/Wo/Dependents' was expected to have a positive relationship with the dependent variable. The unexpected sign may be attributed to the fact that spouses without children frequently are employed. This may cause enlistees to decide to quit the service when frequent moves in the Army hinder their spouses' jobs. This variable was not significant at the .10 level.

Next, the positive relationships of technical and medical occupation with the dependent variable were unexpected. This may be explained by a lack of confidence among respondents in these occupations in the ease of conversion of their Army-learned skills to civilian job skills. Technical occupation was not statistically significant at the .10 level.

TABLE 13

ESTIMATION RESULTS OF REENLISTMENT INTENTION MODEL

VARIABLE	COEFFICIENT	SIGNIFICANCE LEVEL
Single/Wo/Dependents	-.379	.12
Single/W/Dependents	.864	.16
Married/Wo/Dependents	-.436	.13
Black	.389	< .10
Hispanic	.066	.82
YOS	.284	< .0005
Technical	.167	.48
Medical	1.014	< .05
Admin/Supply	.286	.24
Probability of Alternative	-.593	< .05
Factor1(Work Environment)	.867	< .0001
Factor2(Pecuniary Benefits)	.293	< .05

Six independent variables were statistically significant. The variable 'Black' was significant at .10 level. Black race/ethnic group members were expected to prefer the military

to civilian organizations due to the anticipation that blacks would feel more satisfaction with equality, self-achievement, and job security etc. in the military than in civilian society. About 60% of the black race/ethnic group responsed positively to the question about reenlistment intention. Thus, this variable, as expected, showed a strong relationship with reenlistment intention.

The variable 'YOS' was significant at the .0005 level. A frequency distribution showed that the longer the YOS, the higher the proportion responding positively to the question about reenlistment intention. The average length of service in this sample was 7 years, and 52% of this group responsed positively to the question about reenlistment intention. Thus, this variable's sign was as expected.

The variable 'Medical' was significant at the .05 level. About 72% of the medical occupation group in this sample responsed positively to the question about their intention to remain in the Army. However, the medical occupation group was expected to be very likely to find a good civilian alternative. Thus, this variable was expected to have a negative relationship with the reenlistment intention response rather than the positive relationship shown here.

The variable 'Probability of Alternative' was significant at the .05 level. Generally, based on turnover theory, one who has a good chance of findinig a good alternative would be expected to want to leave the present job for a new

opportunity. About 51% of respondents who had a good chance of finding a good alternative job intended to remain in the Army. Thus, the sign for this variable was expected to have the observed negative relationship with reenlistment plans.

The two factor variables were significant at the .0001 level (factor 1) and the .05 level (factor 2). The more satisfied with one's work environment and pecuniary benefits, the more likely one is to remain in that organization. Thus, these variables were as expected in their relationships with reenlistment intention.

On the other hand, six independent variables were statistically non-significant at .10 level. The p value of the variable 'Single/Wo/Dependents' was .12, and its proportion in the sample of this study was about 21%. Also, its proportion in the group who showed positive reenlistment intentions was about 9%. Its group members were expected more likely to leave the service than the base case group. Thus, the sign was as expected.

The variable 'Single/W/Dependents' was statistically non-significant. Its p value was .16, and its proportions in the sample of this study and the group who showed positive reenlistment intentions were respectively about 3% and 4%. Greater responsibility for dependents was expected to make this group more likely to stay in the Army. Thus, the sign was as expected.

The variable 'Married/Wo/Dependents' was statistically non-significant. Its chi-square statistics result (.20) and associated p value (.13) were inadequate for a significant variable. Its proportions in the sample of this study and the group who showed positive reenlistment intentions were, respectively, about 13% and about 11%. These low proportions in the sample may also explain why it was not statistically significant.

The variables 'Hispanic', 'Technical' and 'Admin/Supply' were statistically non-significant. Their respective chi-square values and associated p values were inadequate for significant variables (Hispanic -- .82, .78; Technical -- .48, .83; Admin/Supply -- .24, .71). The signs for these variables were as expected except 'Technical' (as discussed earlier).

Goodness of fit tests for the reenlistment intention model shown in table 13 indicate that this model was accurate in estimating this sample:

Model chi-square = 119.8 (12 D.F.)

(-2 Log L.R.) Prob = 0.0

R = 0.351

The chi-square value (119.8) associated with the model was statistically significant at .01 level. Also, the R value was as large or larger than R values associated with similar logistic regressions of turnover behavior for military personnel. [Ref. 3,4,5]

2. PARTIAL EFFECTS OF INDEPENDENT VARIABLES

The base case of the reenlistment intention model was a respondent who had the following characteristics:

- Race: White

- Family Status: Married with dependents

- Education: Highschool graduate

- YOS/Age: 7/26 years

- MOS: Combat occupation

- Probability of Alternative: Less likely to find a good civilian job.

Each independent variable's effect on reenlistment intention was measured by partial coefficient analysis. The partial effect estimates illustrate the change in the likelihood of reenlistment attributed to a unit change in a single explanatory variable. (The basecase probability was calculated by evaluating all dummy variables at 0 and the continuous or composite variables at their mean values.)

This approach can indicate some important areas that should be considered in formulating retention policies. Table 14 shows the result of partial effects estimates.

a. Personal/Demographic Variables

(1) Household Composition

The variable 'Married/W/Dependents' was the base case for the household composition variables. None of the dummy variables in this category (single/wo/dependents, single/w/dependents, and married/wo/dependents) was

statistically significant at the .10 level. Though partial effects of these variables were comparatively large, their proportions in the particular sample used in this study were low (especially single/w/dependents), as discussed in the prior section.

(2) Race

Hispanic race/ethnic group was not significant at the .10 level, but black race/ethnic group was a significant variable at this level. Blacks were more likely to reenlist than whites. The reenlistment probability of blacks increased by 8.8% above that of whites for the base case individual.

b. Organizational (Military) Characteristics

(1) YOS

Years of service was significant at the .0005 level. Holding other variables equal, the reenlistment probability for the representative respondent increased by 6.5% as he completed one more year of service. The average age of sample respondent was just over 26 with an average of 7 years of service in the Army. With expertise accumulated for several years, an older respondent would tend to select job security rather than new trials in his life.

(2) Occupation

Respondents in the combat occupational specialty were used as the base case for occupational groups since they comprised the largest portion of the sample. Medical occupation was statistically significant at the .01 level. Holding other

TABLE 14

PARTIAL EFFECTS ESTIMATES OF REENLISTMENT INTENTION MODEL

VARIABLE	%	DIFFERENCE FROM BC
Base case intention probability	60.1	.
Single/Wo/Dependents	50.7	- 9.4
Single/W/Dependents	78.1	18.0
Married/Wo/Dependents	49.3	- 10.8
Black *	68.9	8.8
Hispanic	61.6	1.5
YOS (one year) *	66.6	6.5
Technical	64.0	3.9
Medical *	80.6	20.5
Admin/Supply	66.7	6.6
Probability of Alternative *	45.4	- 14.7
Factor1 (one standard deviation) *	76.4	16.3
Factor2 (one standard deviation) *	65.9	5.8

*: Statistically significant at .10 level

variables equal, the representative medical enlistee was more likely to reenlist by 20.5% than a respondent in a combat occupation. Technical occupation was not statistically significant at the .10 level. It did not significantly affect the respondent's reenlistment decision. The same was true for admin/supply occupation.

c. Economic Incentives

(1) Probability of Good Alternative Civilian Job

This variable was significant at the .01 level. Holding other variables equal, the respondent who feels he has a chance of finding a good civilian job is more likely to leave the Army by 14.7% as compared with those who do not feel confident about their alternative job opportunities.

d. Cognitive/Affective Orientation

(1) Factor1 (Work Environment)

The composite work environment variable had a significant effect on the likelihood of reelistment at the .0001 level. The more satisfied with his work environment, the greater the respondent's probability of reenlistment. By increasing the factor score by one standard deviation, the variable 'Factor1' enlarged the respondent's probability of reenlistment by 16.3%.

(2) Factor2 (Pecuniary Benefits)

The pecuniary benefits variable was statistically significant at the .01 level. The more satisfied with

pecuniary benefits in the military, the more likely a respondent was to reenlist. The reenlistment probability became greater by 5.8% when factor 2 was increased by one standard deviation.

B. MODEL ESTIMATION FOR ACTUAL REENLISTMENT

1. MODEL ESTIMATION RESULTS

The logit estimation results of the actual reenlistment model for each independent variable are shown in Table 15. These results show that the signs of the coefficients of three independent variables differed from their hypothesized signs just as in the reenlistment intention model. This table, when compared with Table 13, also shows that there were differences in the significance level of independent variables in the intended and the actual reenlistment models. Three independent variables (single without dependents, married without dependents, and admin/supply group) were statistically significant in the "actual" model, but not significant in the "intention" model. Four independent variables (black, medical, factor 2, and probability of alternative) were statistically non-significant in the "actual" model, though they were significant in the "intention" model. These differences in the significance level between the 'REINTENT' and the 'REENLIST' model are discussed in section C.

The variable 'Single/Wo/Dependents' was significant at the .05 level. About 43% of those in this family status group

actually selected to reenlist . As anticipated, the coefficient of this sample group showed that they were more likely to select to leave the service after the second term of service than a married soldier with dependents. Thus, the sign for this variable was as expected.

The variable 'Married/Wo/Dependents' was significant at the .05 level. The negative sign was not anticipated. Married enlistees without dependents may be more likely to quit the service because their spouses' jobs might be hindered by frequent moves in the Army. About 55% of this group actually selected to leave the service.

The variable 'Admin/Supply' was significant at the .05 level. A respondent in this occupation group was expected to remain in the Army because his chances of finding a good alternative were low. About 60% of this group selected to reenlist in the Army. The sign for this variable was as expected.

Goodness of fit tests for the actual reenlistment model shown in Table 15 indicate that this model was accurate in estimating this sample:

Model chi-square = 67.12 (12 D.F.)

(-2 Log L.R.) Prob = 0.0

R = 0.236

The chi-square value associated with the model was statistically significant at .01 level. Also, the R value was as large or larger than R values associated with similar

logistic regressions of turnover behavior for military
personnel. [Ref. 3,4,5]

TABLE 15

ESTIMATION RESULTS OF ACTUAL REENLISTMENT MODEL

VARIABLE	COEFFICIENT	SIGNIFICANCE LEVEL
Single/Wo/Dependents	-.516	< .05
Single/W/Dependents	.559	.34
Married/Wo/Dependents	-.578	< .05
Black	.149	.47
Hispanic	.173	.54
YOS	.246	< .001
Technical	.365	.11
Medical	.428	.23
Admin/Supply	.510	< .05
Probability of Alternative	-.081	.73
FACTOR 1 (Work Environment)	.562	< .0001
FACTOR 2 (Pecuniary Benefits)	.116	.29

2. PARTIAL EFFECTS OF ACTUAL REENLISTMENT MODEL

The base case for the actual reenlistment model was a respondent with same characteristics as in the reenlistment intention model.

The partial effect analysis for the actual reenlistment model was done in the same way as for the reenlistment intention model. Table 16 shows the results of partial effects estmates.

a. Personal/Demographic Variables

(1) Household Composition

Unlike the reenlistment intention model, two family status variables (single without dependents, married without dependents) were significant at the .05 level. With less responsibility for the family, the respondents in these two groups would be more likely to leave the service by 12.7% or 14.2%, respectively, as compared with a respondent from the group 'married with dependents'.

(2) Race

Also unlike the reenlistment intention model, neither of two dummy variables for race/ethnic group was significant at the .10 level. Race did not have any significant effect on the actual reenlistment results.

b. Organizational (Military) Characteristics

(1) YOS

Years of service was consistently significant at the .001 level. Holding other variables equal, the probability of

actual reenlistment was increased by 6.1% as the respondent completed one more year of service.

(2) Occupation

Respondents in the combat occupational specialty were used as the base case for occupational groups. Admin/Supply occupation was significant at the .05 level. Holding other variables equal, the representative admin/supply enlistee was more likely to reenlist by 12.3% than a respondent in a combat occupation. Technical occupation was not statistically significant at the .10 level. It did not significantly affect the respondent's actual reenlistment. The same was true for medical occupation.

c. Economic Incentives

(1) Probability of Alternative

This variable was not significant at the .10 level. It did not significantly affect the actual reenlistment of a respondent in this sample. Thus, a representative who felt he had a good chance of finding a good civilian alternative was not significantly less likely to select job security rather than a new job.

d. Cognitive/Affective Orientation

(1) Factor1 (Work Environment)

The composite work environment variable had a significant effect on actual reenlistment at the .0001 level as in the intention model. By increasing the factor score by one standard deviation, this variable enlarged the respondent's

TABLE 16

PARTIAL EFFECTS ESTIMATES OF ACTUAL REENLISTMENT MODEL

VARIABLE	%	DIFFERENCE FROM BC
Base case actual reenlistment probability	52.6	.
Single/Wo/Dependents *	39.9	- 12.7
Single/W/Dependents	66.0	13.4
Married/Wo/Dependents *	38.4	- 14.2
Black	56.3	3.7
Hispanic	56.9	4.3
YOS (one year) *	58.7	6.1
Technical	61.5	8.9
Medical	63.0	10.4
Admin/Supply *	64.9	12.3
Probability of Alternative	50.6	- 2.0
Factor1 (one standard deviation) *	64.7	12.1
Factor2 (one standard deviation)	55.1	2.5

*: Statistically significant at .10 level

actual reenlistment probability by 12.1%.

(2) Factor2 (Pecuniary Benefits)

The pecuniary benefits variable was not significant at the .10 level. It did not significantly affect the actual reenlistment of a respondent in this sample, though it had been significant in determining intention.

C. COMPARISON OF REINTENT AND REENLIST MODELS

Table 15 showed some differences in the significance levels of independent variables which were used in both the 'REINTENT' and the 'REENLIST' models. Four variables which were significant at the 10% level in the reenlistment intention model were not significant in the actual reenlistment model. Three variables became significant at this level in the actual reenlistment model, but were not significant in the reenlistment intention model. However, there were no changes in the signs of independent variables' coefficients.

The variables 'Single/Wo/Dependents' and 'Married/Wo/Dependents' were statistically nonsignificant in the reenlistment intention model, but became statistically significant in the actual reenlistment model. The respondents in these family status groups might not have had a clear view of their future in 1985, but 58% and 55%, respectively, of these two groups selected to leave the service at the end of their second terms (by 1989) to test their capabilities in the

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civilian sector. These changes may have become possible due to their more limited responsibilities for dependents than the base case group.

The variable 'Admin/Supply' became statistically significant in the actual reenlistment model. Low skill levels which are characteristic of these jobs provide less opportunity for civilian jobs. This result (significant for actual but not for intended retention) might have been caused by an inaccurate perception of the "marketability" of the skills associated with this type of occupation. A closer look at the job market just prior to reenlistment might have revealed limited prospects for those in admin/supply occupations. About 60% of the admin/supply occupational group selected to stay in the Army.

The variable 'Black' was not statistically significant at the .10 level in the actual reenlistment model, though it was significant in the intention model. Black race/ethnic group members may have found more opportunities for a good civilian alternative that provided a sense of equality and job security than they had expected before.

The variable 'Medical' was also statistically nonsignificant in the actual reenlistment model, but had been significant for planned reenlistment. The unexpected sign of this variable in the intention model may have been caused by a lack of confidence in the prospects for a good civilian alternative among respondents in the medical occupation group.

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This variable may have had the same unexpected sign in the actual model for the same reason, but the respondents in medical occupations may have found more actual opportunities for a good civilian job than they had expected earlier.

The variable 'Probability of Alternative' was statistically nonsignificant in the actual reenlistment model. The perception of a good civilian alternative had no significant effects on actual reenlistment. This contradiction may have been caused by the respondents' age, length of service, and family status. The representative respondent of this sample was already over 26 with 7 years' experience in the Army, and was married with dependents when he completed the survey questionnaire. He was even more mature and established by 1989. Thus, he might have been more inclined to select job security with the Army instead of taking risks in a different world, even though he thought his job opportunities were good. About 55% of those respondents who thought they had a high possibility of finding a good civilian job actually reenlisted in the Army.

The variable 'Factor 2' became statistically nonsignificant in the actual reenlistment model. The more restricted significance of pay and benefits in the actual reenlistment model may have been due to a change in some respondents' attitudes toward military pay and benefits.

D. PREDICTIVE ABILITY OF THE TWO MODELS

The predictive capabilities of two models are described in Tables 17 and 18. Both models were better in predicting stayers than leavers.

The reenlistment intention model correctly predicted intentions for 68.3% of the respondents (385 out of 564). About 17% were classified as intending to stay while, in fact, they planned to leave. About 15% were categorized as planning to leave but they actually planned to stay.

The actual reenlistment model correctly predicted reenlistment for 66% of the sample respondents. About 21% were predicted as reenlistees but they actually left the Army. About 14% were assumed as leavers but they actually remained in the service.

The predictive capability of the 'REINTENT' model was better than that of the 'REENLIST' model. This may have been caused by changes in respondents' lives that happened during the four years between 1985 and 1989 that are not captured in the 'REENLIST' model. His attitudes as well as his personal and military background characteristics may have changed during this time period.

TABLE 17

CLASSIFICATION TABLE OF REINTENT MODEL

PREDICTED

	NEGATIVE	POSITIVE	TOTAL
NEGATIVE	168	94	262 (46.5)
TRUE			
POSITIVE	85	217	302 (53.5)
TOTAL	253 (44.8)	311 (55.2)	564 (100)

* correctly specified: 68.3%

TABLE 18

CLASSIFICATION TABLE OF REENLIST MODEL

PREDICTED

	NEGATIVE	POSITIVE	TOTAL
NEGATIVE	137	116	253 (44.9)
TRUE			
POSITIVE	76	235	311 (55.1)
TOTAL	213 (37.8)	351 (62.2)	564 (100)

* correctly specified: 66.0%

V. CONCLUSION

A. FINDINGS OF THE STUDY

This thesis has developed and tested two models, the 'REINTENT' and the 'REENLIST' models, for an Army male second-termer's intended and actual reenlistment using the 1985 DoD Survey data. Based on the literature review, a number of candidate independent variables were screened before estimating the final models. Finally, four categories of independent variables were selected to be included in both models: personal/demographic traits, organizational characteristics, economic incentives, and cognitive/affective variables. The total number of independent variables was 12. Significant (.10 level) variables of each model were as follows:

- REINTENT model: Black, YOS, Medical, Probability of Alternative, Factor1 (Work Environment), Factor2 (Pecuniary Benefits)

- REENLIST model: Single/Wo/Dep., Married/Wo/Dep., YOS, Admin/Supply, Factor1 (Work Environment)

There were interesting differences in the significant independent variables between two models. Family status, occupation, race/ethnic group, alternative job perceptions, and pecuniary benefits all affected the two decisions differently.

Enlistees with no dependents or with only a spouse were more likely to quit the service after their second terms than married respondents who had dependents, though their intention to quit was not significantly different.

The respondents in admin/supply occupational groups were more likely to stay in the Army than enlistees in the combat occupational group. However, they were not more likely to plan to remain in the service. Those in admin/supply occupational groups may have planned to leave the service but actual job search activity may have discouraged them from leaving. Job opportunities may not have been good for those with the skills acquired in these military occupations.

The respondents in medical occupations were more likely to intend to stay in the service, but did not actually reenlist at significantly higher rates than enlistees in the combat occupational group. Those in medical specialty occupations may have had job search experiences that were very different from those in admin/supply jobs. They may have found job opportunities in the civilian sector better than they expected.

Black race/ethnic group members did not actually reenlist at significantly higher rates than whites. It was expected that they would, based on the significant role of this variable in the reenlistment intention model. While 60% of blacks intended to stay in the Army compared with about 49% of whites, 57% of blacks actually reenlisted compared with 53% of

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whites. Black veterans may have found opportunities for them were better in the civilian sector than they had anticipated and decided to leave the service.

The second-termers in this sample who felt they had high chances of a good civilian alternative did not actually leave the service at significantly higher rates than the base case group. While 49% of this group would intend to leave the Army compared with 35% of the base case group, 45% of them actually quit the service compared with 43% of the base case group. About 80% of the sample considered their civilian opportunities to be good. Service members may be overly optimistic about their civilian opportunities. Thus, limited dispersion of this variable may have allowed it to be overwhelmed by other factors in the actual model.

Satisfaction with pay and benefits was not significant for the enlistees' actual reenlistment, but it was significant for plans about staying. The range of paygrades (E4-E6) was small in these models. The more restricted significance of pay and benefits in the actual reenlistment model may have been due to a change in some respondents' attitudes toward military pay and benefits.

Satisfaction with the work environment was highly significant for both decisions, as was length of service. Work conditions may be just as important for members of the military as they have been shown to be for civilian workers.

Tenure is well established as an important factor for retention.

B. RECOMMENDATIONS FOR ARMY REENLISTMENT POLICY

Based on the findings above, second-termers showed a different tendency from Army first-termers with respect to the effects on reenlistment of satisfaction with pay and benefits. Previous studies of Army first-termers' reenlistment showed that their satisfaction with pay and benefits was more significant for reenlistment than was true of the second-termers in this study.

Second-termers gave more value to satisfaction with the work environment than to satisfaction with monetary rewards in the decision to stay. Army manpower policymakers should recognize this tendency among *second-termers*, and pay attention to factors affecting the work environment in preventing early turnover.

Second term minority group members do not actually reenlist as often as would be expected given reenlistment intentions. Perhaps minorities with 5 to 10 years of service in the Army have better civilian sector opportunities than they expected. However, manpower policy for equal opportunity should be examined to find out if there were any problems affecting reenlistment of black or hispanic soldiers in the Army. An analysis of the civilian job market in 1989 might

also be helpful in finding out why minority group status was not a significant factor affecting actual reenlistment.

C. **FUTURE RESEARCH ORIENTATION**

This study has focused on the reenlistment of Army male second-termers. Due to the changing environments for the supply of manpower resources, women's roles and proportions in the Army have been increasing. Thus, the presence of more women careerists in the Army is likely. Research analyzing women careerists' reenlistment issues is recommended to cope with these environmental changes in the Army.

This study has focused on active duty reenlistment in the Army by using 1985 DoD Survey data. To obtain a more complete understanding of Army male second-termers' reenlistment, a comparative analysis of similar groups in the Reserve forces and in the civilian sector would also be recommended.

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